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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* JEFFREY A. TILTON

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Appeal 2008-0490  
Application 10/099,659  
Technology Center 1700

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Decided: February 27, 2008

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Before EDWARD C. KIMLIN, CHARLES F. WARREN, and  
THOMAS A. WALTZ, *Administrative Patent Judges*.

WALTZ, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Primary Examiner's final rejection of claims 1, 5-7, and 9-28, which are the only claims pending in this application (*see also* the Amendments dated June 15, 2006, and Oct. 19, 2006, entered as per the Advisory Actions dated

July 5, 2006, and Dec. 8, 2006, respectively (Br. 6).<sup>1</sup> We have jurisdiction pursuant to 35 U.S.C. § 6(b).

According to Appellant, the invention is directed to an insulating material, where the material comprises in weight percent about 20-60% low melt bicomponent fiber, 10-40% high melt bicomponent fiber, and 20-60% staple fiber, and the high melt bicomponent fiber has a melt flow temperature above that of the low melt bicomponent fiber, the average fiber diameter of all fibers is between 18-22 microns, and the low melt and high melt fibers are concentric sheath/core CoPET/PET (Br. 7). Independent claim 1 is illustrative of the invention on appeal and a copy of this claim is reproduced below:

1. An insulating material, comprising in weight percent about 20-60% low melt bicomponent fiber, 10-40% high melt bicomponent fiber and 20-60% staple fiber wherein said high melt bicomponent fiber has a melt flow temperature above that of said low melt bicomponent fiber, wherein the average fiber diameter of said low melt bicomponent fiber, said high melt bicomponent fiber and said staple fiber is between 18-22 microns and wherein said low melt and high melt bicomponent fibers are a concentric sheath/core CoPET/PET.

The Examiner has relied on the following prior art references as evidence of obviousness:

Goettmann	5,851,355	Dec. 22, 1998
Yamaguchi	6,977,111 B2	Dec. 20, 2005

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<sup>1</sup> We refer to and cite from the amended Appeal Brief dated Jan. 16, 2007.

## ISSUES ON APPEAL

Claims 1, 5-7, and 9-28 stand rejected under 35 U.S.C. § 103(a) as unpatentable over “Goettmann as evidenced by Yamaguchi” (Ans. 3).

Appellant contends that Goettmann teaches a non-woven web using only 1-10% by weight of a second thermoplastic binder, in contrast to claims 1 and 27 which require 20-60% by weight of the corresponding low melt bicomponent fiber (Br. 9). Appellant contends that there is no motivation or suggestion to optimize the amount of low melt bicomponent fiber outside of the ranges taught by Goettmann (Br. 10 and 12), and the Examiner’s assertion of optimization is contrary to the express teachings of Goettmann that porosity is crucial to the invention (Br. 11).

Appellant contends that the Examiner ignores the claimed requirement that the minimum average fiber diameter of claims 1 and 27 is 18 microns, and there is no evidence that the average fiber diameter of Goettmann falls within the claimed range (Br. 11-12).

Appellant also presents contentions regarding the Examiner’s “inherent” presumption for dependent claims 5-7, 10-11, and 21-26 (Br. 14-15), as well as specific arguments for claim 20 (Br. 15-16). We consider these claims separately below.

The Examiner contends that the amount of fibers, fiber diameter, and density are result-effective variables, and that Goettmann teaches that the range and blend of bicomponent fibers may be varied to effect the desired physical properties (Ans. 5 and 8).

The Examiner contends that it was known in the art, and taught by Goettmann, that the physical properties of the sheet material can be altered to fit a particular set of physical specifications (Ans. 7-8). The Examiner

also contends that Goettmann requires a denier of 0.2 to 3.0 for the staple fibers, and Appellant concedes that this denier is equivalent to a fiber diameter of 4.5 to 17.6 microns (Ans. 6). The Examiner further contends that determining the optimum fiber diameter would have involved only routine skill in the art (*id.*).

Accordingly, we determine that the issues presented in the record of this appeal are as follows: (1) Has Appellant established that the Examiner reversibly erred in concluding the amount of low melt bicomponent fibers was well within the ordinary skill in this art?; and (2) Has Appellant established that the Examiner reversibly erred in concluding that the average fiber diameter was well within the ordinary skill in this art?

We determine that the Examiner has properly established a *prima facie* case of obviousness for all claims except claim 20, which *prima facie* case has not been adequately rebutted by Appellant's arguments. Therefore, we AFFIRM the rejection of claims 1, 5-7, 9-19, and 21-28 essentially for the reasons stated in the Answer, as well as those reasons set forth below. Since the Examiner has not provided any evidence that the subject matter of claim 20 was known in the art, or explained any reason for the combination or substitution of crystalline/semi-crystalline bicomponent fibers for high melt bicomponent fibers, we determine that *prima facie* obviousness has not been established for this claimed subject matter. Therefore, we REVERSE the rejection of claim 20 essentially for the reasons stated in the Brief, as well as those reasons set forth below. Accordingly, the decision of the Examiner is AFFIRMED-IN-PART.

OPINION

Although Goettmann is directed to a fiber sheet material useful as a support substrate for a reverse osmosis membrane (col. 1, ll. 5-10), Appellant does not dispute that Goettmann discloses a material comprising 5-40% by weight staple fibers, 0 to 60% by weight a second staple fiber, 15-50% of a first binder fiber corresponding to the claimed high melt bicomponent fiber, and 1-10% by weight of a second binder fiber corresponding to the claimed low melt bicomponent fiber (Br. 9; Goettmann, col. 3, ll. 57-67). We determine that Goettmann expressly teaches that the bicomponent fibers are core/sheath made of polyester/copolyester, with Examples to PET as the polyester (Goettmann, col. 2, ll. 57-65; col. 4, ll. 1-19; Yamaguchi, col. 10, l. 62-col. 11, l. 1). We further determine that Goettmann discloses denier of the staple fibers that corresponds to a maximum average fiber diameter of about 18 microns (Ans. 6). Therefore, we determine, as discussed above as the issues on appeal, that the only differences between the subject matter recited in claim 1 on appeal and Goettmann is the amount of low melt bicomponent fiber and the average fiber diameter (for all three fibers).

Under 35 U.S.C. § 103, the factual inquiry into obviousness requires a determination of: (1) the scope and content of the prior art; (2) the differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) secondary considerations, if any. *See Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). “[A]nalysis [of whether the subject matter of a claim is obvious] need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR Int’l Co. v. Teleflex, Inc.*, 127

S. Ct. 1727, 1740-41 (2007) quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). Discovery of the optimum value of a result effective variable in a known process is ordinarily within the skill of the art. See *In re Aller*, 220 F.2d 454, 456 (CCPA 1955); *In re Boesch*, 617 F.2d 272, 276 (CCPA 1980). “The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. [Citations omitted]. These cases have consistently held that in such a situation, the applicant must show that the particular range is *critical*, generally by showing that the claimed range achieves unexpected results relative to the prior art range.” *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990). The case where the parameter optimized was not recognized to be a result effective variable is an exception to this rule. See *In re Antonie*, 559 F.2d 618, 620 (CCPA 1977). “While it may ordinarily be the case that determination of optimum values for the parameters of a prior art process would be at least be *prima facie* obvious, that conclusion depends upon what the prior art discloses with respect to those parameters.” *In re Sebek*, 465 F.2d 904, 907 (CCPA 1972).

We determine that Goettmann discloses the three fiber sheet material or composite in general terms, with “preferred embodiments” teaching 1-10% by weight of the low melt bicomponent fiber (*compare* col. 2, ll. 40-55 with col. 3, ll. 55-67). Accordingly, we determine that Goettmann is not limited to the preferred embodiment. We also determine that Goettmann, at col. 3, ll. 24-37, teaches both denier (and thus fiber diameter) and the quantity of polyester are result effective variables:

Strength and porous characteristics are imparted to the composite by the combination of polyester fibers employed in

the invention. In particular, the strength of the composite can be improved by varying the polyester fiber content in accordance with the following relations: (a) as the polyester denier increases at constant length and amount, the porosity, bulk and stiffness of the composite increase and the amount of fiber entanglement decreases; (b) as the polyester length increases at constant denier and amount, the tensile and tear strengths in the MD and CD directions and the Mullen burst strength increase and the stiffness decreases; and (c) as the quantity of polyester increases at constant denier and length, the tensile strength improves, Mullen burst and tear strengths, and porosity increase.

We further determine that Goettmann teaches, at col. 6, ll. 36-42:

The range and blend of bicomponent binder fibers may also be varied to effect desired physical properties. Furthermore, the physical properties as well as the performance of the sheet material can be altered to fit a particular set of physical specifications by adjusting the furnish composition and ratio as well as the calendaring parameters.

Therefore, on this record, we determine that optimization of the fiber diameters of the low melt and high melt bicomponent fibers would have been well within the ordinary skill in the art, especially in view of the teachings of Goettmann. We further determine that optimization of the amount of low melt bicomponent fiber, even to amounts outside the preferred ranges, would have been obvious to one of ordinary skill in the art in view of the teachings of Goettmann, as long as the amount of such fiber did not increase the porosity above the requisite range (*see* col. 3, ll. 35-37, and col. 6, ll. 59-62).

For the foregoing reasons and those stated in the Answer, we determine that the Examiner has established a *prima facie* case of

obviousness in view of the reference evidence, which *prima facie* case has not been adequately rebutted by Appellant's arguments. We note that no evidence has been submitted to rebut the *prima facie* case.

With regard to claims 5-7, 10-11, and 21-26, which Appellant argues as a group (Br. 14-15), we determine that these claims recite physical properties of the claimed material. As discussed above, Goettmann teaches varying many parameters to achieve desired physical properties. Therefore, we determine that these claims merely recite properties which would have been easily optimized by one of ordinary skill in the art in view of the teachings of Goettmann.

With regard to claim 20 on appeal, the Examiner states that it would have been obvious to replace the high melt bicomponent fibers in part or in whole with crystalline/semi-crystalline bicomponent fibers "since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of design choice," citing *In re Leshin* (Ans. 7-8). However, the Examiner has not presented any factual findings that the crystalline/semi-crystalline material required by claim 20 on appeal was a "known material" and suitable for the intended use of Goettmann. "Where the legal conclusion [of obviousness] is not supported by facts it cannot stand." *In re Warner*, 379 F.2d 1011, 1017 (CCPA 1967). Accordingly, we cannot sustain the Examiner's rejection of claim 20 under § 103(a) over Goettmann in view of Yamaguchi.

Therefore, we affirm the rejection of claims 1, 5-7, 9-19, and 21-28 under § 103(a) over Goettmann in view of Yamaguchi. We reverse the

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rejection of claim 20 under § 103(a) over Goettmann in view of Yamaguchi.  
The decision of the Examiner is affirmed-in-part.

No time period for taking any subsequent action in connection with  
this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

**AFFIRMED-IN-PART**

tf/ls

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